



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

Address: COMMISSIONER FOR PATENTS

P.O. Box 1450

Alexandria, Virginia 22313-1450

www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/598,963	09/15/2006	Hans Adams	VKSWP0102US	2661
23908 7590 08/02/2010 RENNER OTTO BOISSELLE & SKLAR, LLP 1621 EUCLID AVENUE NINETEENTH FLOOR CLEVELAND, OH 44115				
EXAMINER				
MAL TIEN HUNG				
ART UNIT		PAPER NUMBER		
2836				
MAIL DATE		DELIVERY MODE		
08/02/2010		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/598,963

**Applicant(s)**

ADAMS ET AL.

**Examiner**

TIEN MAI

**Art Unit**

2836

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 08 July 2010.  
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-3 and 5-9 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1-3 and 5-9 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☐ Information Disclosure Statement(s) (PTO/SI/22)  
4) ☐ Interview Summary (PTO-413)  
5) ☐ Notice of Informal Patent Application  
6) ☐ Other: \_\_\_\_\_  
Paper No(s)/Mail Date \_\_\_\_\_

### **DETAILED ACTION**

1. Applicant's response of 07/08/2010 has been entered and considered. Upon entering amendment, claims 1 and 6 have been amended.

### ***Response to Arguments***

2. Applicant's arguments with respect to claims 1 and 6 have been considered but are moot in view of the new ground(s) of rejection.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takizawa et al. (US 4,998,177, "Takizawa") in view of Dettmann et al. (4,291,358, "Dettmann") and Howell (US 5,164,872, "Howell").
5. **Regarding claim 1**, Takizawa discloses electromagnetic solenoid drive apparatus, the apparatus (fig.1) comprising:
  - a coil (22) supplied by a voltage source (1),
  - a voltage-dependent resistor (23, 24, 28 and 30) provided between the voltage source the coil, and

an auxiliary voltage source (27) connected in parallel to the coil, the voltage of said auxiliary voltage source being opposite to that of said voltage source in reversal voltage event,

wherein the voltage-dependent resistor includes a plurality of electronic switches (28 and 30) connected in series in the form of a cascade, said electronic switches each bridging a series resistor (23 and 24) and being driven into the closing state when an input voltage applied by said voltage source falls below a given switching voltage (when the voltage source is below 12 volts) (col. 4, line 56 - col. 5, line 2).

Takizawa does not explicitly disclose the electronic switches are driven simultaneously into the closing state. Howell discloses a voltage-dependent resistor including a plurality of electronic switches (30 and 70) connected in series in the form of a cascade, said the electronic switches bridging a voltage-dependent device (42), wherein the electronic switches are driven simultaneously into closing state by a control circuit (36) via signal line (38) (see fig. 5). However, Takizawa's solution works properly only with DC power supply. If the solenoid requires AC power supply Takizawa's solution should be modified with Howell's solution which capable of driving AC current. In the Howell's circuit, the combination of two electronic switches (30 and 70 in fig. 5) can efficiently control the AC current while both electronic switches are driven by the same control signal (38). When the circuit of Takizawa may be modified by replacing each one of driving transistor (28 and 30) directionally switch according to Howell. In the obtained circuit each of the electronic switches of Howell bridging a series resistor. It would have been obvious to one of ordinary skill in the art at the time of the invention

was made to modify the solenoid drive circuit of Takizawa because suggested of modification of Takizawa according to Howell will allow driving the solenoid by AC current when the solenoid requires AC current.

Takizawa does not explicitly disclose the electromagnetic solenoid drive apparatus for a valve; rather it is for auto-door lock device. Dettmann discloses magnetic valve (fig. 2) with electronic control (fig. 1) comprising a valve opening, a valve member movable (7-9) relative to the valve opening for controlling flow through the valve opening, a coil (AE) supplied by a voltage source (3 and 4) for effecting movement of the valve member relative to the valve opening. The claim would have been obvious because market forces provide a reason to make an adaptation of the Takizawa solenoid drive modified according to teachings of Dettmann magnetic valve, since it would expand a market niche for the manufacturers of such system, and such application resulted from use of the prior knowledge in a predictable manner will bring quite predictable results. According to the Supreme Court decision, When a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. If a person of ordinary skill can implement a predictable variation, § 103 likely bars its patentability. For the same reason, if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill. See *Sakraida v. Ag Pro*, 425 U.S. 273, 189 USPQ 449 (1979) or *Anderson's-Black Rock Inc. v. Pavement Salvage Co.*, 396 U.S. 57, 163 USPQ 673 (1969).

6. **Regarding claim 5**, Takizawa discloses that the switching voltage is determined by a reference voltage path (5) when switch (4) is closed.

7. Claims 2 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takizawa in view of Dettmann and Howell, and further in view of Yiannoulos (US 4,705,322, "Yiannoulos").

Takizawa, Dettmann and Howell disclose the limitations as discussed above. Neither Takizawa nor Howell nor Dettmann explicitly discloses the auxiliary voltage source comprising a Zener diode and the auxiliary voltage source connected in series with a rectifier diode. Rather, Takizawa discloses the auxiliary voltage source is a rectifier diode (27). Yiannoulos discloses in fig. 2 that adding a Zener diode (20) to an existing rectifier diode (14) (as shown in fig. 1) to improve the speed of the switching action of the circuit (col. 3, lines 48-62). It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the circuit of Takizawa in view of Howell and Dettmann and add a Zener diode, as taught by Yiannoulos, in order to improve the speed of the switching action of the circuit (col. 3, lines 48-62).

8. Claims 6 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takizawa in view of Dettmann.

9. **Regarding claim 6**, Takizawa discloses electromagnetic solenoid drive apparatus, the apparatus (fig. 1) comprising:

a coil (22) supplied by a voltage source (1),

a voltage-dependent resistor (23, 24, 28 and 30) provided between the voltage source and the coil, and

an auxiliary voltage source (27) connected in parallel to the coil, the voltage of said auxiliary voltage source being opposite to that of said voltage source in reversal voltage event,

wherein the voltage-dependent resistor includes a plurality of electronic switches (28 and 30) connected in series in the form of a cascade, said electronic switches each bridging a series resistor (23 and 24) and being driven into the closing state when an input voltage applied by said voltage source falls below a given switching voltage (when the voltage source is below 12 volts), and wherein each electronic switch is switches by an auxiliary transistor (10 and 17) (col. 4, line 56 - col. 5, line 2).

Takizawa does not explicitly disclose the electromagnetic solenoid drive apparatus for a valve; rather it is for auto-door lock device. Dettmann discloses magnetic valve (fig. 2) with electronic control (fig. 1) comprising a valve opening, a valve member movable (7-9) relative to the valve opening for controlling flow through the valve opening, a coil (AE) supplied by a voltage source (3 and 4) for effecting movement of the valve member relative to the valve opening. The claim would have been obvious because market forces provide a reason to make an adaptation of the Takizawa solenoid drive modified according to teachings of Dettmann magnetic valve, since it would expand a market niche for the manufacturers of such system, and such application resulted from use of the prior knowledge in a predictable manner will bring quite predictable results. According to the Supreme Court decision, When a work is

available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. If a person of ordinary skill can implement a predictable variation, § 103 likely bars its patentability. For the same reason, if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill. See *Sakraida v. Ag Pro*, 425 U.S. 273, 189 USPQ 449 (1979) or *Anderson's-Black Rock Inc. v. Pavement Salvage Co.*, 396 U.S. 57, 163 USPQ 673 (1969).

10. **Regarding claim 9**, Takizawa discloses that the switching voltage is determined by a reference voltage path (5) when switch (4) is closed.

11. Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takizawa in view of Dettmann, and further in view of Yiannoulos.

Takizawa and Dettmann disclose the limitations as discussed above. Neither Takizawa nor Dettmann explicitly discloses the auxiliary voltage source comprising a Zener diode and the auxiliary voltage source connected in series with a rectifier diode. Rather, Takizawa discloses the auxiliary voltage source is a rectifier diode (27). Yiannoulos discloses in fig. 2 that adding a Zener diode (20) to an existing rectifier diode (14) (as shown in fig. 1) to improve the speed of the switching action of the circuit (col. 3, lines 48-62). It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the circuit of Takizawa in view of Dettmann



and add a Zener diode, as taught by Yiannoulos, in order to improve the speed of the switching action of the circuit (col. 3, lines 48-62).

### ***Conclusion***

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **TIEN MAI** whose telephone number is 571-270-1277. The examiner can normally be reached on **M-Th: 8:00-7:00**. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jared Fureman

Art Unit: 2836

can be reached on 571-272-2391. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

/Tien Mai/  
Examiner, Art Unit 2836  
07/27/2010

/Stephen W Jackson/  
Primary Examiner, Art Unit 2836